

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listings of claims in the application:

**LISTING OF CLAIMS:**

1. (currently amended): An anisotropic material comprising an alternating-line pattern and a layer of at least one functional compound selected from the group consisting of a semiconductor compound, an electrically conductive compound, a photochromic compound and a thermochromic compound, formed on a surface of the alternating-line pattern, wherein one type of lines in the alternating-line pattern surface comprises a fluorine-containing compound, the fluorine-containing compound is at least one fluorine-containing organic silane compound, ~~fluorine-containing organic thiol compound, fluorine-containing organic disulfide compound, or fluorine-containing organic phosphate ester compound~~, selected from the group consisting of:

(a) a fluorine compound of the formula:

Rf-A-SiX<sub>3</sub>, or

Rf-O-A-SiX<sub>3</sub>,

wherein Rf is a branched perfluoroalkyl group having 3 to 5 carbon atoms,

A is an alkylene group having 1 to 4 carbon atoms,

A-SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, and

X is a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4,

which has a branched perfluoroalkyl group having 5 or less carbon atoms;

(b) a fluorine compound having a perfluoropolyether group of the formula:

PFPE-A-SiX<sub>3</sub>,

wherein PFPE is a perfluoropolyether group,

A is an alkylene group having 1 to 4 carbon atoms,

a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, and

X is a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4

(c) a fluorine compound having a polymer structure obtained by polymerizing a monomer which has a perfluoroalkyl group having 5 or less carbon atoms, and of the formula:

Polymer-D-SiX<sub>3</sub>,

wherein Polymer represents a polymer structure group obtained by polymerizing a perfluoroalkyl group-containing monomer represented by the general formula:

Rf-A-OC(=O)CR<sup>3</sup>=CH<sub>2</sub>

wherein Rf is a straight-chain or branched perfluoroalkyl group having 1 to 5 carbon atoms,

R<sup>3</sup> is a hydrogen atom, an F atom, a Cl atom, a CF<sub>3</sub> group, a CF<sub>2</sub>H group, a CFH<sub>2</sub> group or a methyl group, and

A is an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, D represents -S(CH<sub>2</sub>)<sub>p</sub>OCONH(CH<sub>2</sub>)<sub>q</sub>- wherein p and q are 1 to 4, or -CH<sub>2</sub>CH<sub>2</sub>-, and

X represents a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4, and

(d) a fluorine compound having a linking group which is any one of an urethane group, an ester group, an ether group and an amide group, existing between a perfluoroalkyl group having 5 or less carbon atoms and a functional group which is a silane group, a thiol group, a disulfide group or a phosphoric acid group; or of the formula:

Rf-A-Z-A'-SiX<sub>3</sub>

wherein Rf represents a perfluoroalkyl group having 5 or less carbon atoms,

A and A' represent an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group,

Z is a urethane group, an ester group, an ether group or an amide group, and

X is a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4, or

the fluorine-containing compound is at least one selected from the group consisting of:

(e) an incompletely-condensed silsesquioxane which has a perfluoroalkyl group having 5 or less carbon atoms, represented by the general formula:



wherein R and R' represent Rf, Rf-A, an alkyl group having 1 to 22 carbon atoms, or a derivative of an alkyl group having 1 to 22 carbon atoms provided that at least one of R and R' is Rf or Rf-A wherein Rf represents a perfluoroalkyl group having 5 or less carbon atoms, and A represents an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, and l and m represent such a number that a molecular weight of the incompletely-condensed silsesquioxane is within a range from 500 to 100000, and

(f) a completely-condensed silsesquioxane which has a silane group and a perfluoroalkyl group having 5 or less carbon atoms, represented by the formula:



wherein R represents Rf, Rf-A, an alkyl group having 1 to 22 carbon atoms, or a derivative of an alkyl group having 1 to 22 carbon atoms provided that at least one of R is Rf or Rf-A wherein Rf represents a perfluoroalkyl group having 5 or less carbon atoms, A represents an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, R' represents an organic group containing SiX<sub>3</sub>, wherein X is a hydrogen atom, a halogen atom or OC<sub>n</sub>H<sub>2n+1</sub> where n=1 to 4 and l and m represent such a number that a molecular weight of the completely-condensed silsesquioxane is within a range from 500 to 100000.

2. (previously presented): The anisotropic material according to claim 1, wherein a difference between surface free energy of the type of lines comprising the fluorine compound and surface free energy of the other type of lines is at least 5 mJ/m<sup>2</sup>.

3. (original): The anisotropic material according to claim 1, wherein the alternating-line pattern has a line width of 0.5 to 100  $\mu\text{m}$ .

4. (original): The anisotropic material according to claim 1, wherein the alternating-line pattern has unevenness of not more than 10 nm.

5. (original): The anisotropic material according to claim 1, wherein the shape of droplets is distorted when 2  $\mu\text{L}$  of ethanol is gently dropped from above the alternating-line pattern, and the degree of distortion is at least 1.1 in terms of a ratio L/W of the length in a major axis (L) to the length in a minor axis (W) of droplets.

6. (canceled).

7. (withdrawn-currently amended): A method for producing an anisotropic material comprising an alternating-line pattern and a layer of at least one functional compound selected from the group consisting of a semiconductor compound, an electrically conductive compound, a photochromic compound and a thermochromic compound, formed on a surface of the alternating-line pattern, wherein one type of lines in the alternating-line pattern surface comprises a fluorine-containing compound, the fluorine-containing compound is at least one fluorine-containing organic silane compound, ~~fluorine-containing organic thiol compound, fluorine-containing organic disulfide compound, or fluorine-containing organic phosphate ester compound,~~ selected from the group consisting of:

(a) a fluorine compound which has a branched perfluoroalkyl group having 5 or less carbon atoms, of the formula:

Rf-A-SiX<sub>3</sub>, or

Rf-O-A-SiX<sub>3</sub>,

wherein Rf is a branched perfluoroalkyl group having 3 to 5 carbon atoms,

A is an alkylene group having 1 to 4 carbon atoms,

A -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, and

X is a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4,

(b) a fluorine compound having a perfluoropolyether group of the formula:

PFPE-A-SiX<sub>3</sub>,

wherein PFPE is a perfluoropolyether group,

A is an alkylene group having 1 to 4 carbon atoms,

a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms,  
and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, and

X is a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4,

(c) a fluorine compound having a polymer structure obtained by polymerizing a monomer  
which has a perfluoroalkyl group having 5 or less carbon atoms, and of the formula:

Polymer-D-SiX<sub>3</sub>,

wherein Polymer represents a polymer structure group obtained by polymerizing a  
perfluoroalkyl group-containing monomer represented by the general formula:

Rf-A-OC(=O)CR<sup>3</sup>=CH<sub>2</sub>

wherein Rf is a straight-chain or branched perfluoroalkyl group having 1 to 5 carbon  
atoms,

R<sup>3</sup> is a hydrogen atom, an F atom, a Cl atom, a CF<sub>3</sub> group, a CF<sub>2</sub>H group, a CFH<sub>2</sub> group  
or a methyl group, and

A is an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that  
R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4  
carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, D represents -S(CH<sub>2</sub>)<sub>2</sub>OCONH(CH<sub>2</sub>)<sub>q</sub>- wherein p  
and q are 1 to 4, or -CH<sub>2</sub>CH<sub>2</sub>-, and

X represents a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4, and

(d) a fluorine compound having a linking group which is any one of an urethane group,  
an ester group, an ether group and an amide group, existing between a perfluoroalkyl group  
having 5 or less carbon atoms and a functional group which is a silane group, a thiol group, a  
disulfide group or a phosphoric acid group; or of the formula:

Rf-A-Z-A'-SiX<sub>3</sub>

wherein Rf represents a perfluoroalkyl group having 5 or less carbon atoms.

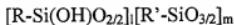
A and A' represent an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group,

Z is a urethane group, an ester group, an ether group or an amide group, and

X is a hydrogen atom, a halogen atom, or OC<sub>n</sub>H<sub>2n+1</sub> wherein n is 1 to 4, or

the fluorine-containing compound is at least one selected from the group consisting of:

(e) an incompletely-condensed silsesquioxane which has a perfluoroalkyl group having 5 or less carbon atoms, represented by the general formula:



wherein R and R' represent Rf, Rf-A, an alkyl group having 1 to 22 carbon atoms, or a derivative of an alkyl group having 1 to 22 carbon atoms provided that at least one of R and R' is Rf or Rf-A wherein Rf represents a perfluoroalkyl group having 5 or less carbon atoms, and A represents an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, and l and m represent such a number that a molecular weight of the incompletely-condensed silsesquioxane is within a range from 500 to 100000, and

(f) a completely-condensed silsesquioxane which has a silane group and a perfluoroalkyl group having 5 or less carbon atoms, represented by the formula:



wherein R represents Rf, Rf-A, an alkyl group having 1 to 22 carbon atoms, or a derivative of an alkyl group having 1 to 22 carbon atoms provided that at least one of R is Rf or Rf-A wherein Rf represents a perfluoroalkyl group having 5 or less carbon atoms, A represents an alkylene group having 1 to 4 carbon atoms, a -SO<sub>2</sub>N(R<sup>21</sup>)R<sup>22</sup>- group provided that R<sup>21</sup> is an alkyl group having 1 to 4 carbon atoms, and R<sup>22</sup> is an alkylene group having 1 to 4 carbon atoms or a -CH<sub>2</sub>CH(OH)CH<sub>2</sub>- group, R' represents an organic group containing SiX<sub>3</sub>, wherein X is a hydrogen atom, a halogen atom or OC<sub>n</sub>H<sub>2n+1</sub> where n=1 to 4 and l and m represent such a number that a molecular weight of the completely-condensed silsesquioxane is within a range from 500 to 100000,

which method comprises applying a solution of at least one functional compound selected from the group consisting of a semiconductor compound, an electrically conductive compound, a photochromic compound and a thermochromic compound on the surface of an alternating-line pattern, one type of lines of which comprises a fluorine-containing compound.

8. (withdrawn): The method according to claim 7, wherein a liquid which dissolves the functional compound is a solvent having a surface tension of not more than 30 mN/m.

9. (withdrawn): A method for producing a functional material, comprising using, as a template, a pattern surface composed of plural regions each having different surface free energy, characterized in that:

(1) at least one region of the pattern surface is treated with a fluorine compound, and

(2) the method comprises applying a functional compound solution on the pattern surface and removing a solvent.

10. (canceled).

11. (withdrawn): A functional material produced by the method according to claim 9.

12. (withdrawn): A method for producing a functional material, which comprises applying a functional compound to a pattern surface having at least one region surface-treated with a fluorine compound.

13. (withdrawn): The method according to claim 12, wherein the fluorine compound comprises a fluorine compound having the following structure:

(a) a fluorine compound which has a branched fluoroalkyl group having 5 or less carbon atoms,

(b) a fluorine compound having a perfluoropolyether group,

(c) a fluorine compound having a polymer structure obtained by polymerizing a monomer which has a fluoroalkyl group having 5 or less carbon atoms,

(d) a fluorine compound having a linking group which is any one of an urethane group, an ester group, an ether group and an amide group, existing between a fluoroalkyl group having 5 or less carbon atoms and a functional group,

(e) an incompletely-condensed silsesquioxane which has a fluoroalkyl group having 5 or less carbon atoms, and

(f) a completely-condensed silsesquioxane which has a silane group and a fluoroalkyl group having 5 or less carbon atoms.

14. (withdrawn): A functional material produced by the method according to claim 12.

15. (previously presented): An anisotropic material according to claim 1, wherein both lines of the alternating-line pattern are made of a monomolecular film.

16. (previously presented): The anisotropic material according to claim 1, wherein the layer of the at least one functional compound has a thickness of from 0.1 nm to 100 µm.

17. (currently amended): The anisotropic material according to claim 1, wherein the one type of lines in the alternating-line pattern surface comprises a fluorine-containing organic silane compound having a branched perfluoroalkyl group having 5 or less carbon atoms  
comprises compound (a).

18. (canceled).